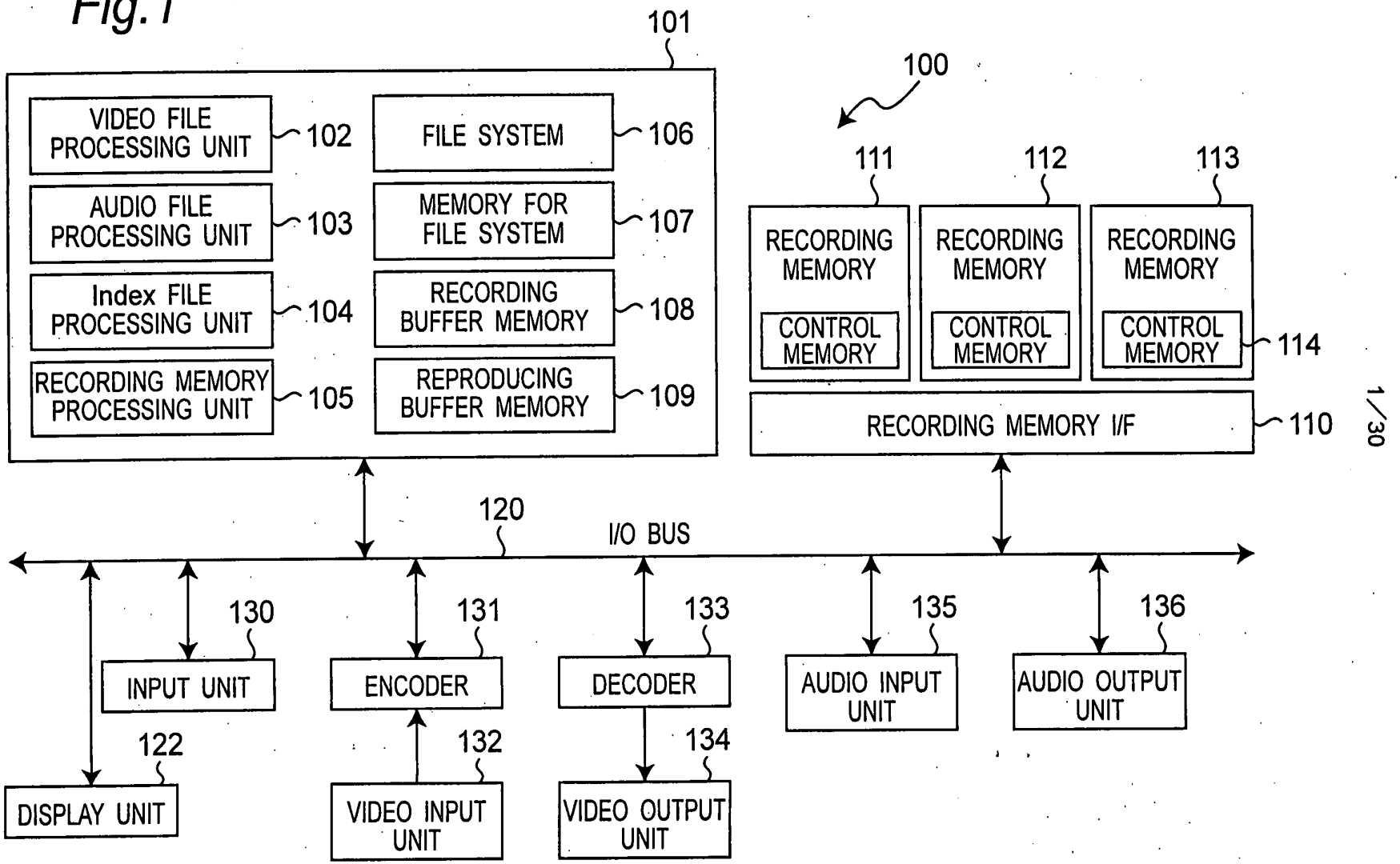
Fig.1



10/555708

Fig.2

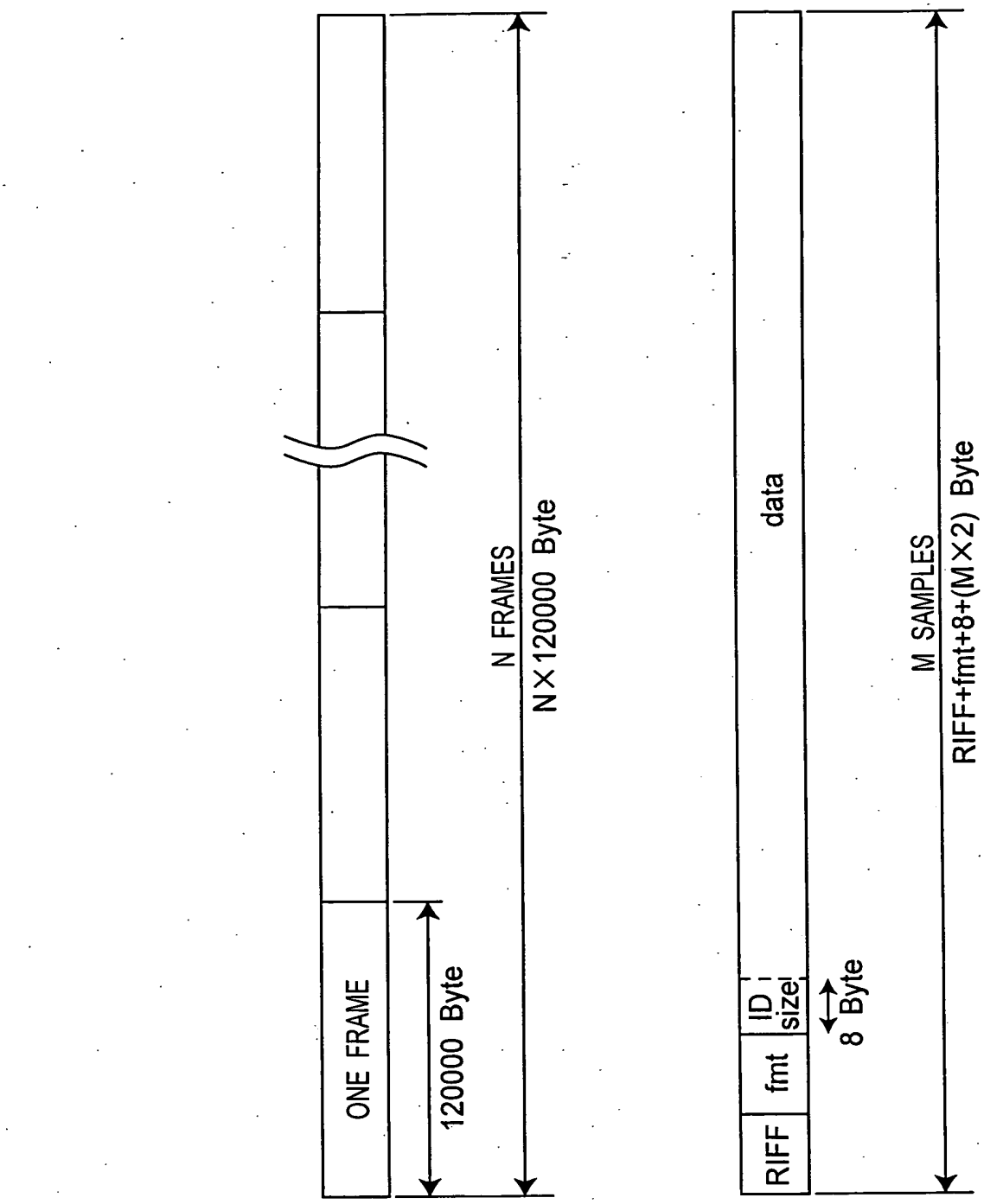

(a) VIDEO FILE
DIF FORMAT FILE
(NTSC)
ONE FRAME
120000 Byte
N FRAMES
N×120000 Byte
(b) AUDIO FILE
WAVE FORMAT FILE
RIFF
fmt
ID
size
8 Byte
data
M SAMPLES
RIFF+fmt+8+(M×2) Byte

Fig.3

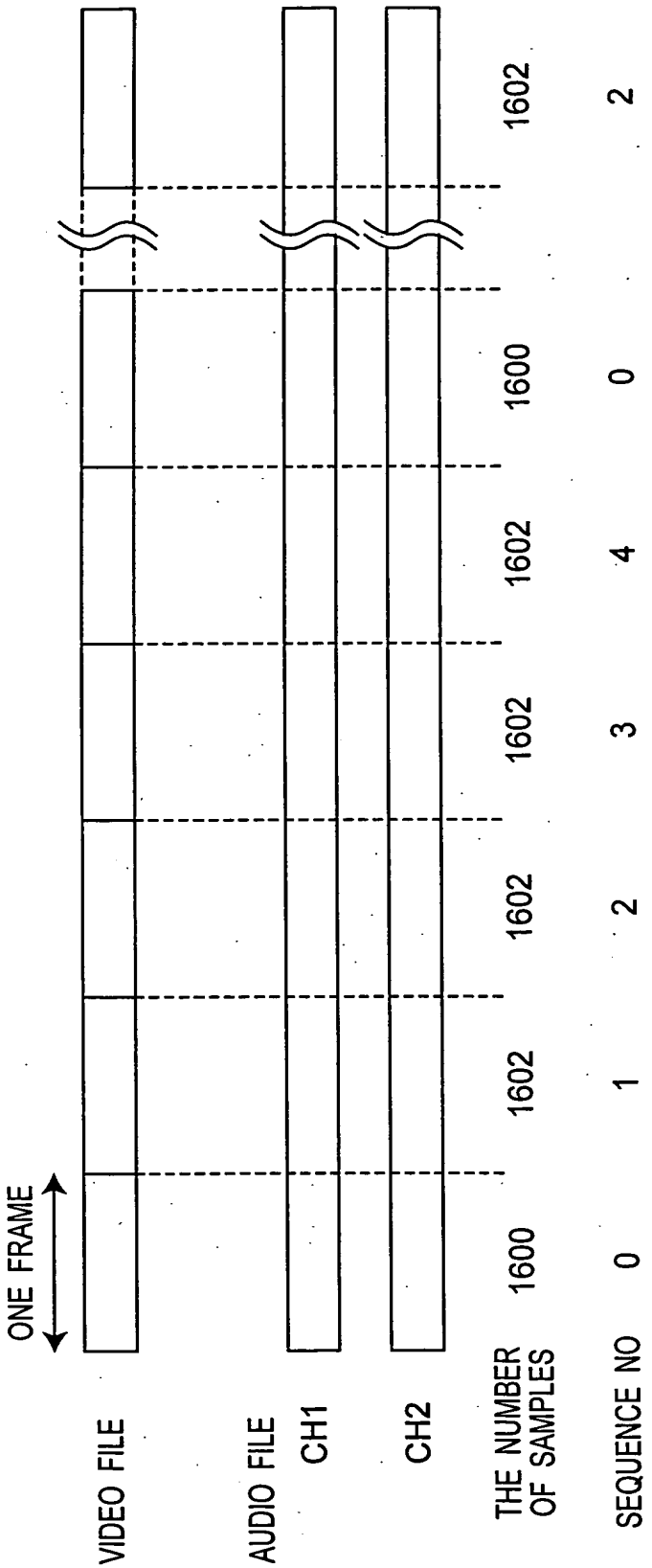

ONE FRAME
VIDEO FILE
AUDIO FILE
CH1
CH2
THE NUMBER OF SAMPLES
SEQUENCE NO
1600
1602
1602
1602
1602
1602
1600
0
1
2
3
4
0
2

Fig.4

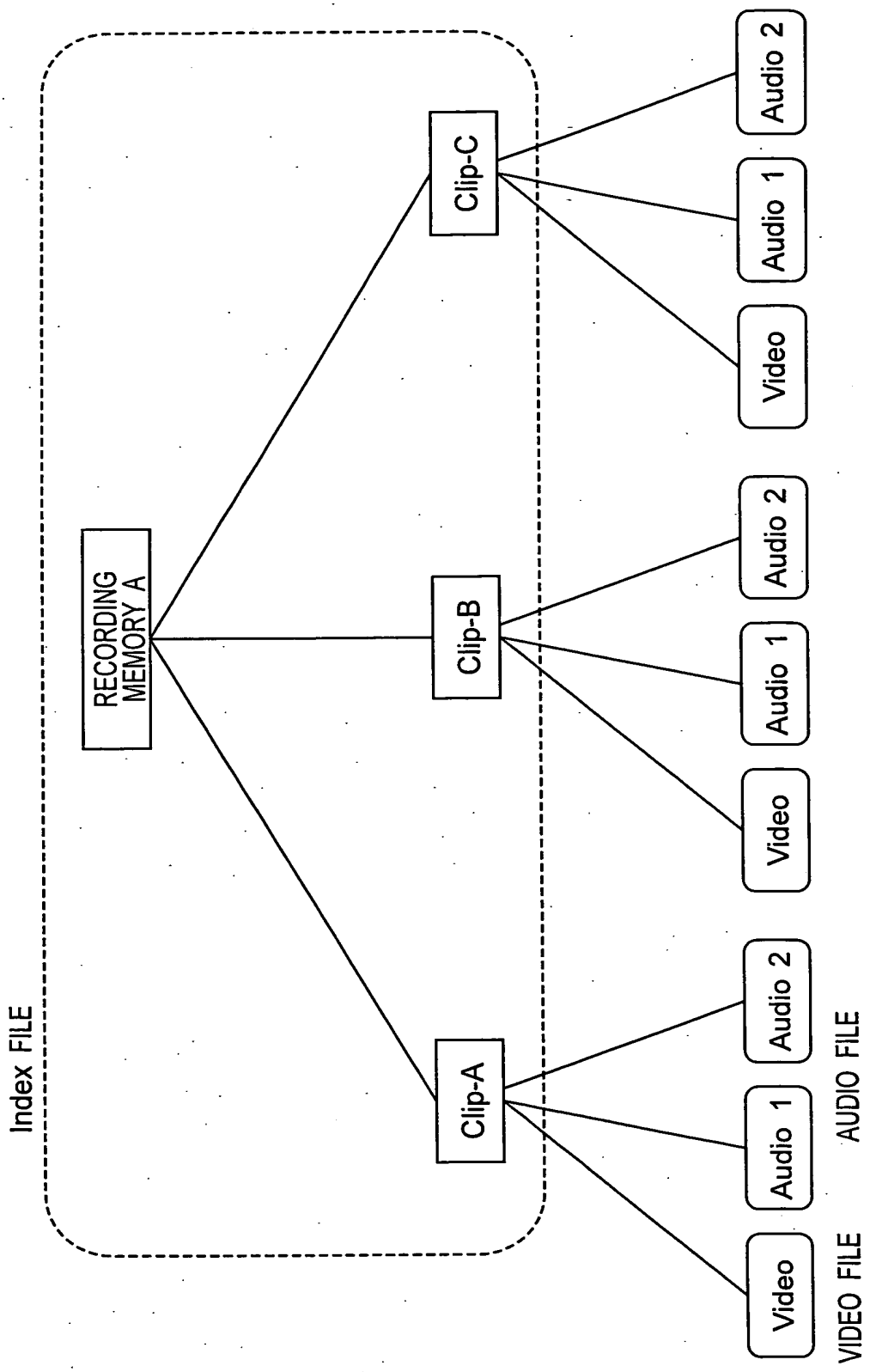

Index FILE
RECORDING MEMORY A
Clip-A
Clip-B
Clip-C
Video
Audio 1
Audio 2
VIDEO FILE
AUDIO FILE

Fig.5

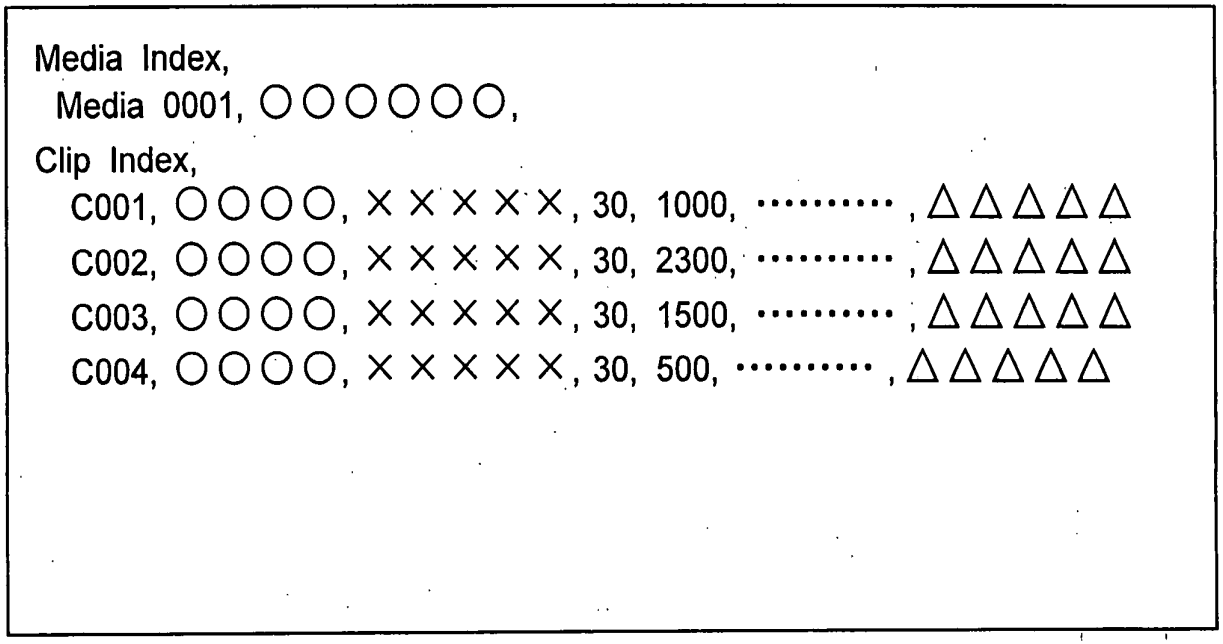


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Fig.6

(1) Media Index (FOR EACH MEDIUM)

NAME	CONTENT
Media ID	ID UNIQUE TO EACH MEDIUM
Media Title	TITLE UNIQUE TO MEDIUM

(2) Clip Index (FOR EACH Clip)

NAME	CONTENT
Clip ID	ID UNIQUE TO EACH Clip
Clip Title	TITLE UNIQUE TO Clip
UMID	DESCRIBE UMID OF Clip
Frame Rate	FRAME RATE OF Video
Duration	Clip LENGTH (THE NUMBER OF FRAMES)
Sequence NO.	SEQUENCE NO. (0-4)
Offset	TIME FROM RECORDING START TO Clip HEAD (Frame LENGTH)
Previous Clip	MEDIA ID & Clip-ID OF Clip CONNECTED IMMEDIATELY PREVIOUS TO CORRESPONDING Clip
Next Clip	MEDIA ID & Clip-ID OF Clip CONNECTED IMMEDIATELY NEXT TO CORRESPONDING Clip

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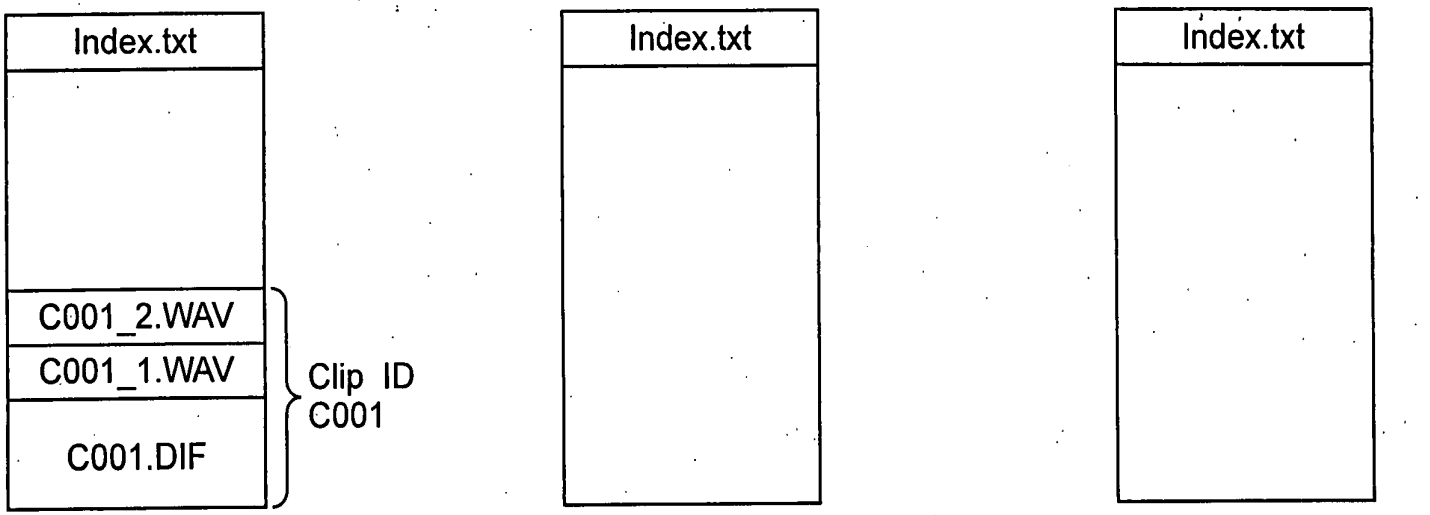
Fig.7



10/559708

Fig.8

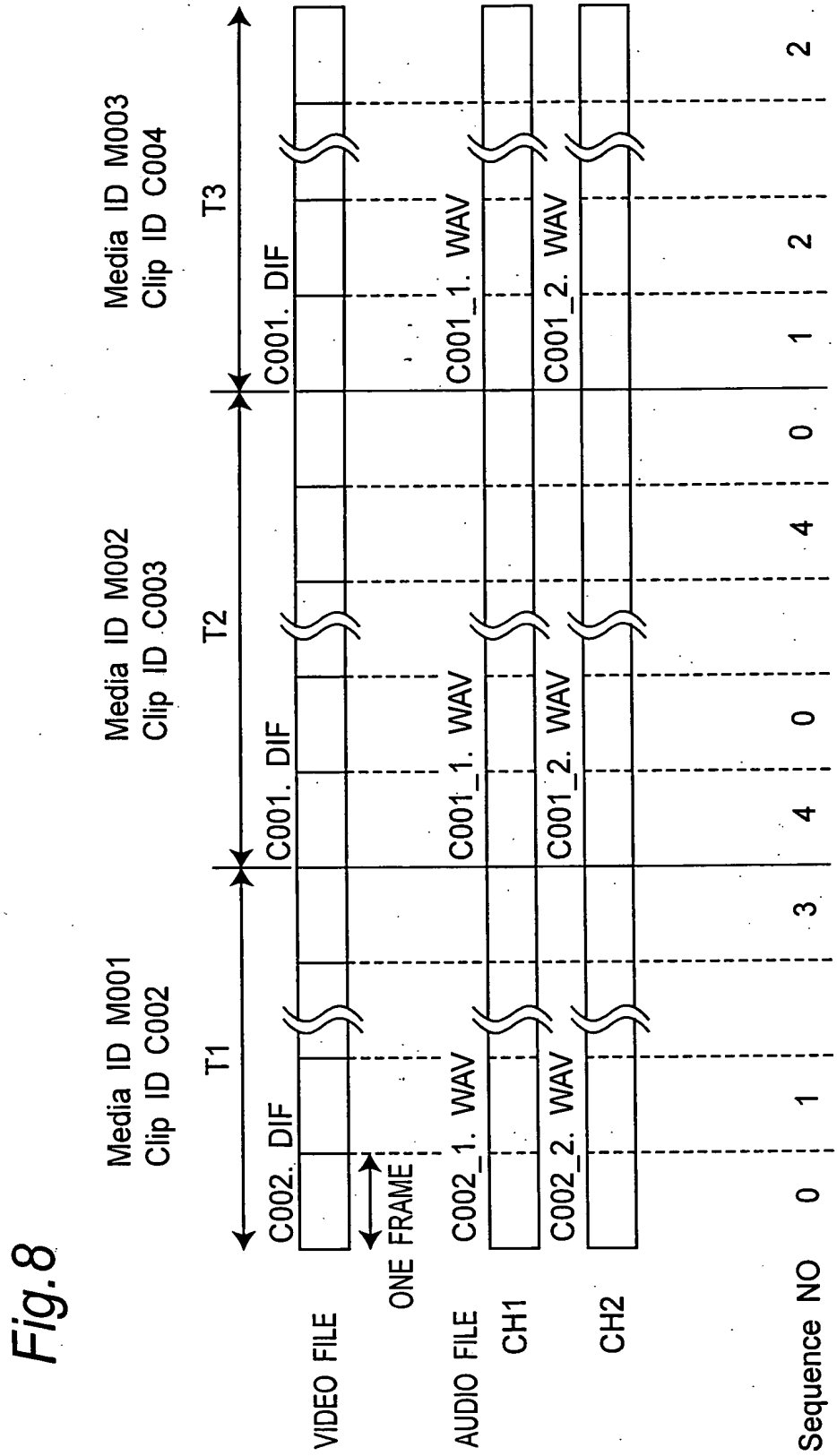

Media ID M001
Clip ID C002
Media ID M002
Clip ID C003
Media ID M003
Clip ID C004
T1
T2
T3
C002. DIF
C001. DIF
C001. DIF
ONE FRAME
C002_1. WAV
C001_1. WAV
C001_1. WAV
C002_2. WAV
C001_2. WAV
C001_2. WAV
VIDEO FILE
AUDIO FILE
CH1
CH2
Sequence NO
0
1
3
4
0
4
0
1
2
2

Fig.9

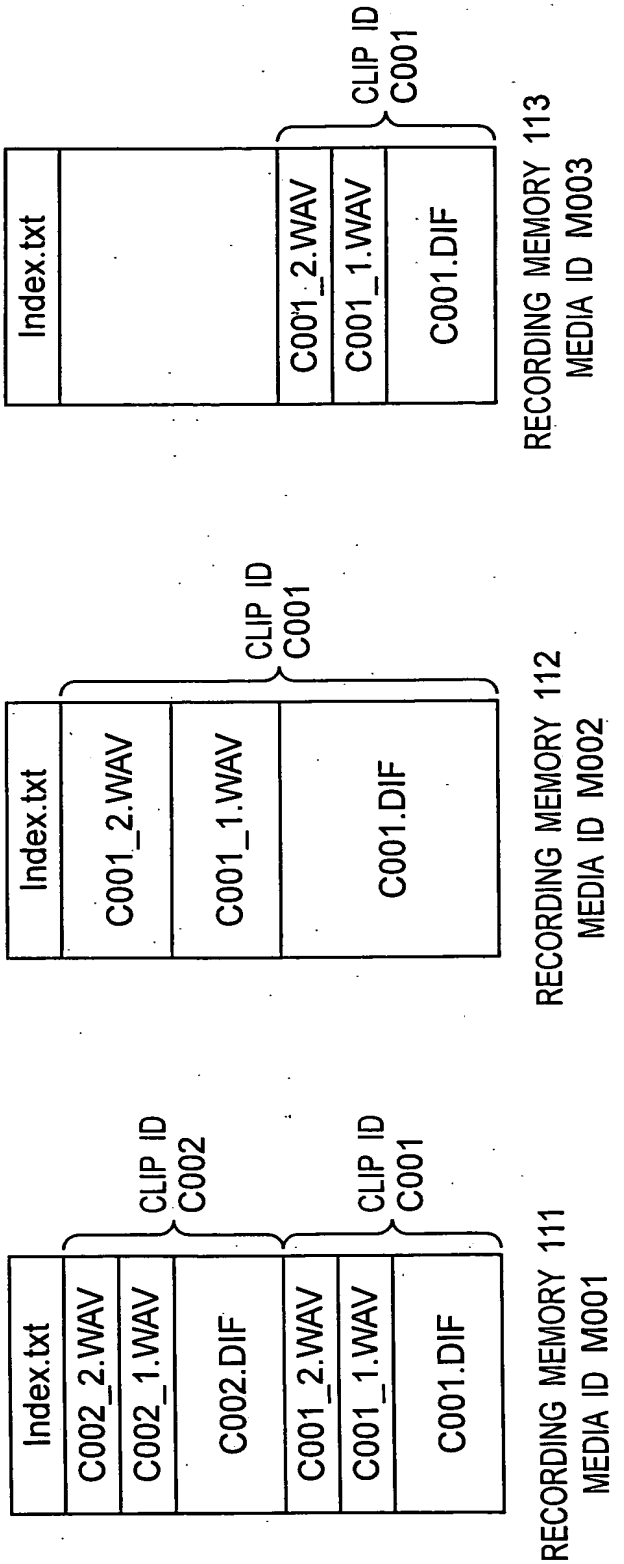

Index.txt
C002_2.WAV
C002_1.WAV
C002.DIF
C001_2.WAV
C001_1.WAV
C001.DIF
CLIP ID C002
CLIP ID C001
RECORDING MEMORY 111
MEDIA ID M001
Index.txt
C001_2.WAV
C001_1.WAV
C001.DIF
CLIP ID C001
RECORDING MEMORY 112
MEDIA ID M002
Index.txt
C001_2.WAV
C001_1.WAV
C001.DIF
CLIP ID C001
RECORDING MEMORY 113
MEDIA ID M003

Fig.10

RECORDING MEMORY 111 (Media ID M001)

```
Media Index
  M001, MEDIUM 1,
Clip Index
  C001, CLIP 1, (UMID0), 29, 97, T0, 0, 0,   ,   ,
  C002, CLIP 2, (UMID1), 29, 97, T1, 0, 0,   , M002 C001
```

RECORDING MEMORY 112 (Media ID M002)

```
Media Index
  M002, MEDIUM 2,
Clip Index
  C001, CLIP 1, (UMID1), 29, 97, T2, 4, T1, M001 C002, M003 C001,
```

RECORDING MEMORY 113 (Media ID M003)

```
Media Index
  M003, MEDIUM 3,
Clip Index
  C001, CLIP 1, (UMID1), 29, 97, T3, 1, T1+T2, M002 C001,   ,
```


10/552708

Fig.11

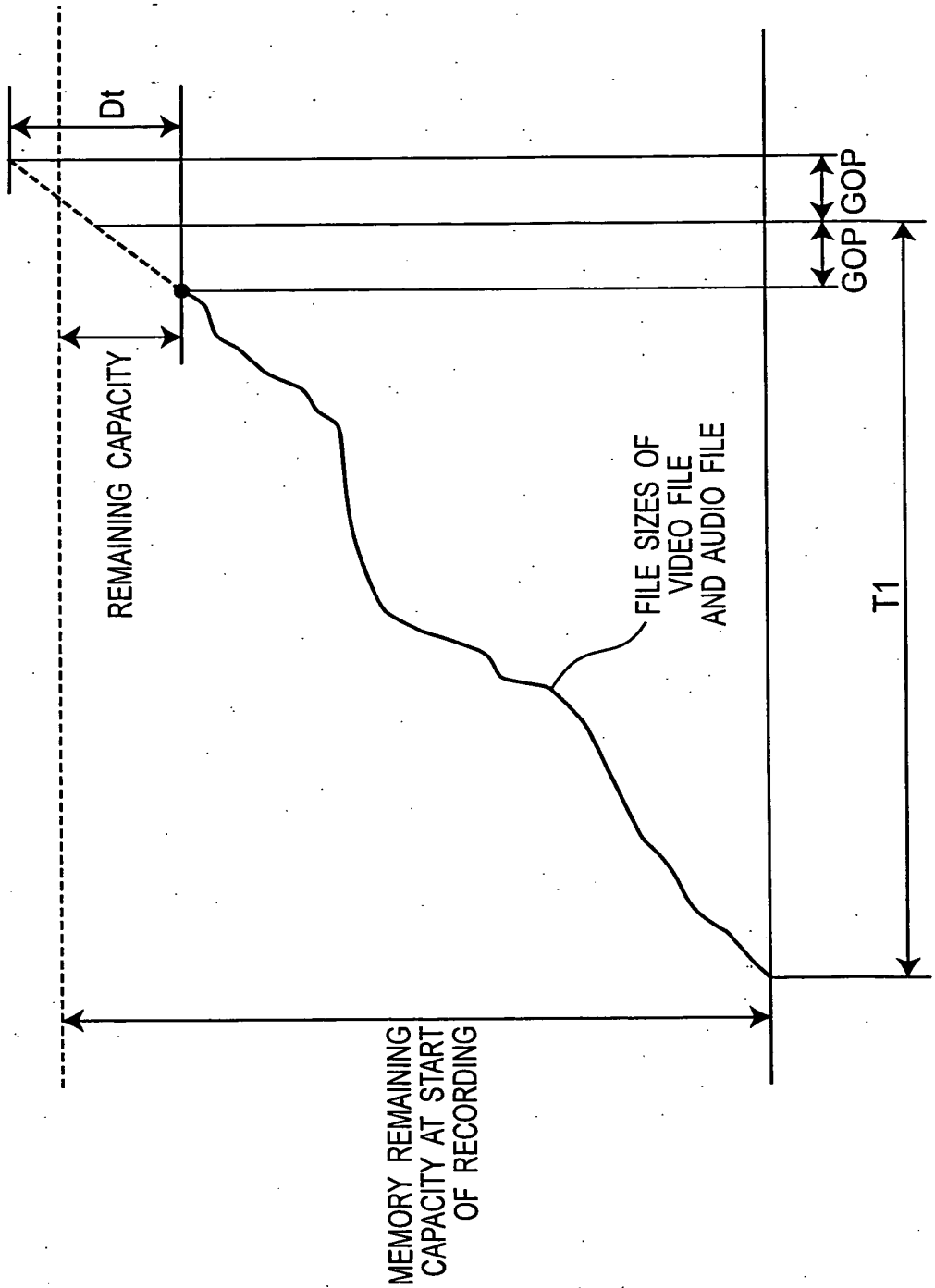

Dt
GOP
GOP
REMAINING CAPACITY
FILE SIZES OF VIDEO FILE AND AUDIO FILE
T1
MEMORY REMAINING CAPACITY AT START OF RECORDING

Fig.12

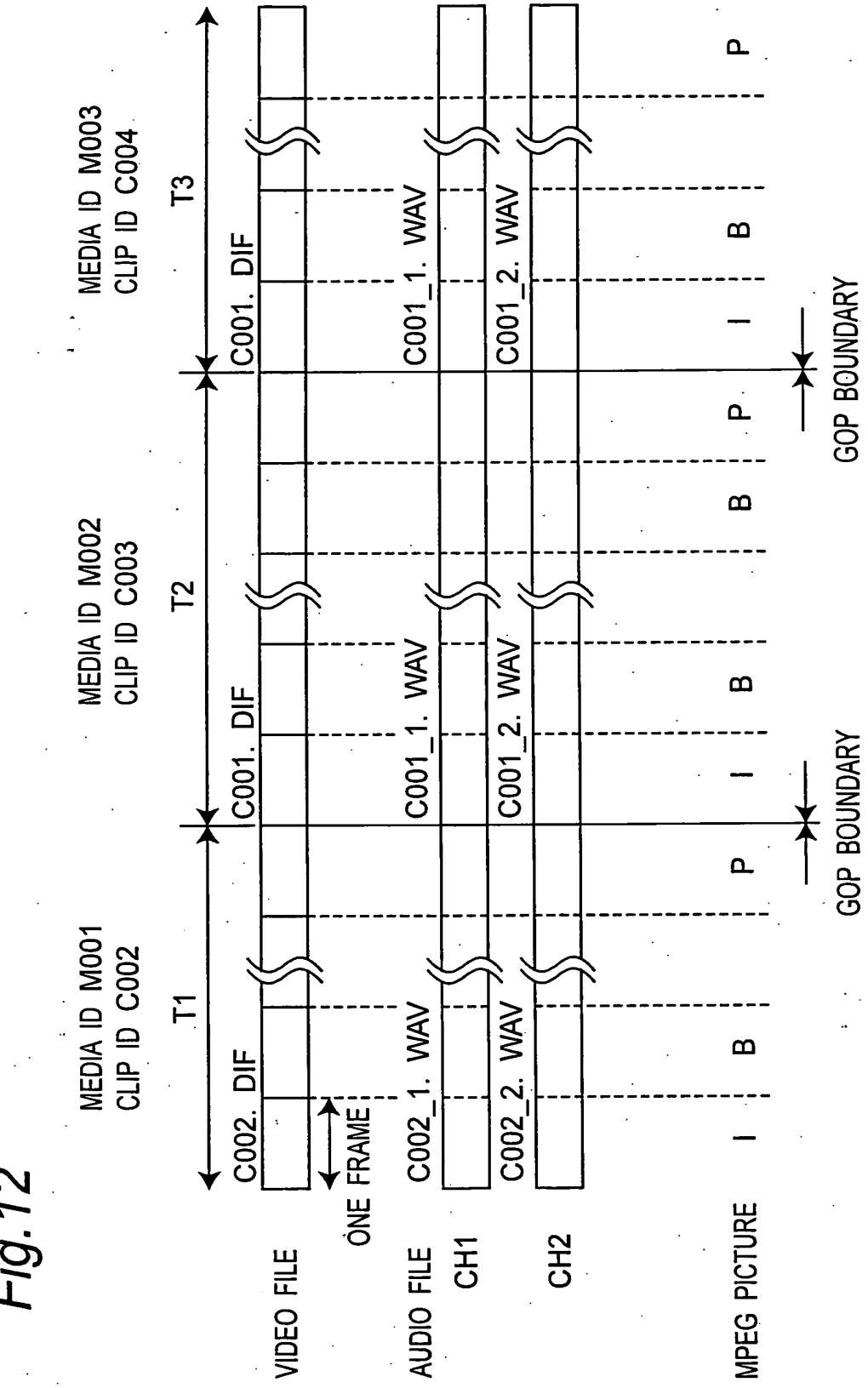

MEDIA ID M001
CLIP ID C002
MEDIA ID M002
CLIP ID C003
MEDIA ID M003
CLIP ID C004
T1
T2
T3
C002. DIF
C001. DIF
C001. DIF
C002_1. WAV
C002_2. WAV
C001_1. WAV
C001_2. WAV
C001_1. WAV
C001_2. WAV
ONE FRAME
VIDEO FILE
AUDIO FILE
CH1
CH2
MPEG PICTURE
I
B
P
B
I
B
P
B
I
P
GOP BOUNDARY
GOP BOUNDARY

Fig.13

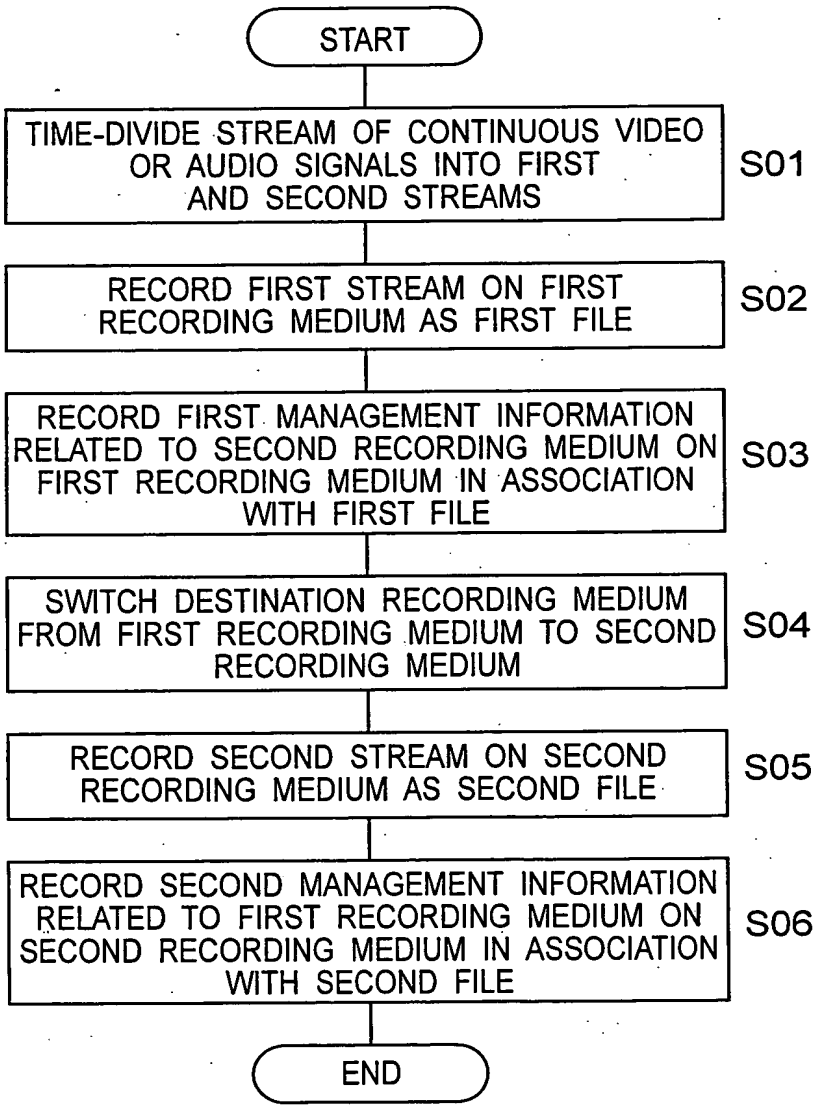

START
TIME-DIVIDE STREAM OF CONTINUOUS VIDEO OR AUDIO SIGNALS INTO FIRST AND SECOND STREAMS
S01
RECORD FIRST STREAM ON FIRST RECORDING MEDIUM AS FIRST FILE
S02
RECORD FIRST MANAGEMENT INFORMATION RELATED TO SECOND RECORDING MEDIUM ON FIRST RECORDING MEDIUM IN ASSOCIATION WITH FIRST FILE
S03
SWITCH DESTINATION RECORDING MEDIUM FROM FIRST RECORDING MEDIUM TO SECOND RECORDING MEDIUM
S04
RECORD SECOND STREAM ON SECOND RECORDING MEDIUM AS SECOND FILE
S05
RECORD SECOND MANAGEMENT INFORMATION RELATED TO FIRST RECORDING MEDIUM ON SECOND RECORDING MEDIUM IN ASSOCIATION WITH SECOND FILE
S06
END

Fig.14

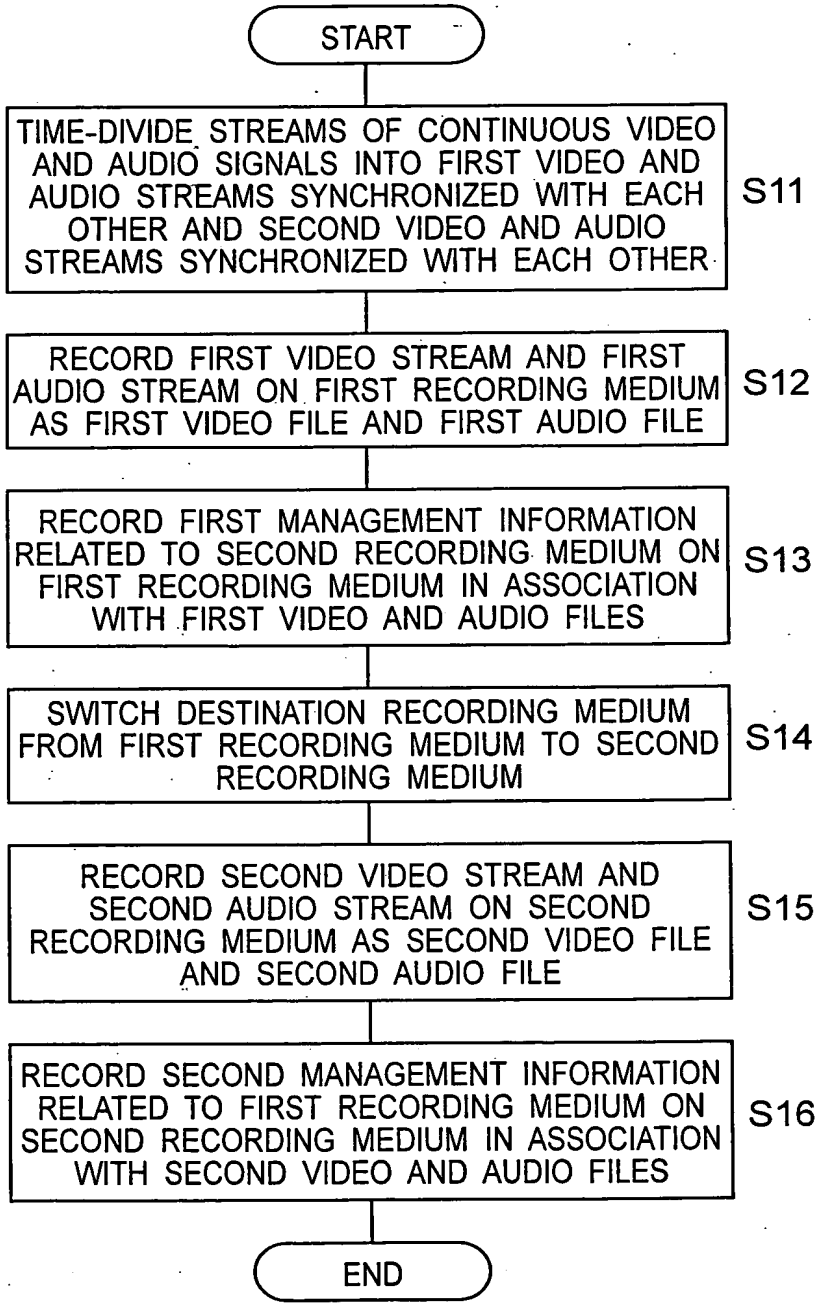

START
TIME-DIVIDE STREAMS OF CONTINUOUS VIDEO AND AUDIO SIGNALS INTO FIRST VIDEO AND AUDIO STREAMS SYNCHRONIZED WITH EACH OTHER AND SECOND VIDEO AND AUDIO STREAMS SYNCHRONIZED WITH EACH OTHER
S11
RECORD FIRST VIDEO STREAM AND FIRST AUDIO STREAM ON FIRST RECORDING MEDIUM AS FIRST VIDEO FILE AND FIRST AUDIO FILE
S12
RECORD FIRST MANAGEMENT INFORMATION RELATED TO SECOND RECORDING MEDIUM ON FIRST RECORDING MEDIUM IN ASSOCIATION WITH FIRST VIDEO AND AUDIO FILES
S13
SWITCH DESTINATION RECORDING MEDIUM FROM FIRST RECORDING MEDIUM TO SECOND RECORDING MEDIUM
S14
RECORD SECOND VIDEO STREAM AND SECOND AUDIO STREAM ON SECOND RECORDING MEDIUM AS SECOND VIDEO FILE AND SECOND AUDIO FILE
S15
RECORD SECOND MANAGEMENT INFORMATION RELATED TO FIRST RECORDING MEDIUM ON SECOND RECORDING MEDIUM IN ASSOCIATION WITH SECOND VIDEO AND AUDIO FILES
S16
END

Fig.15

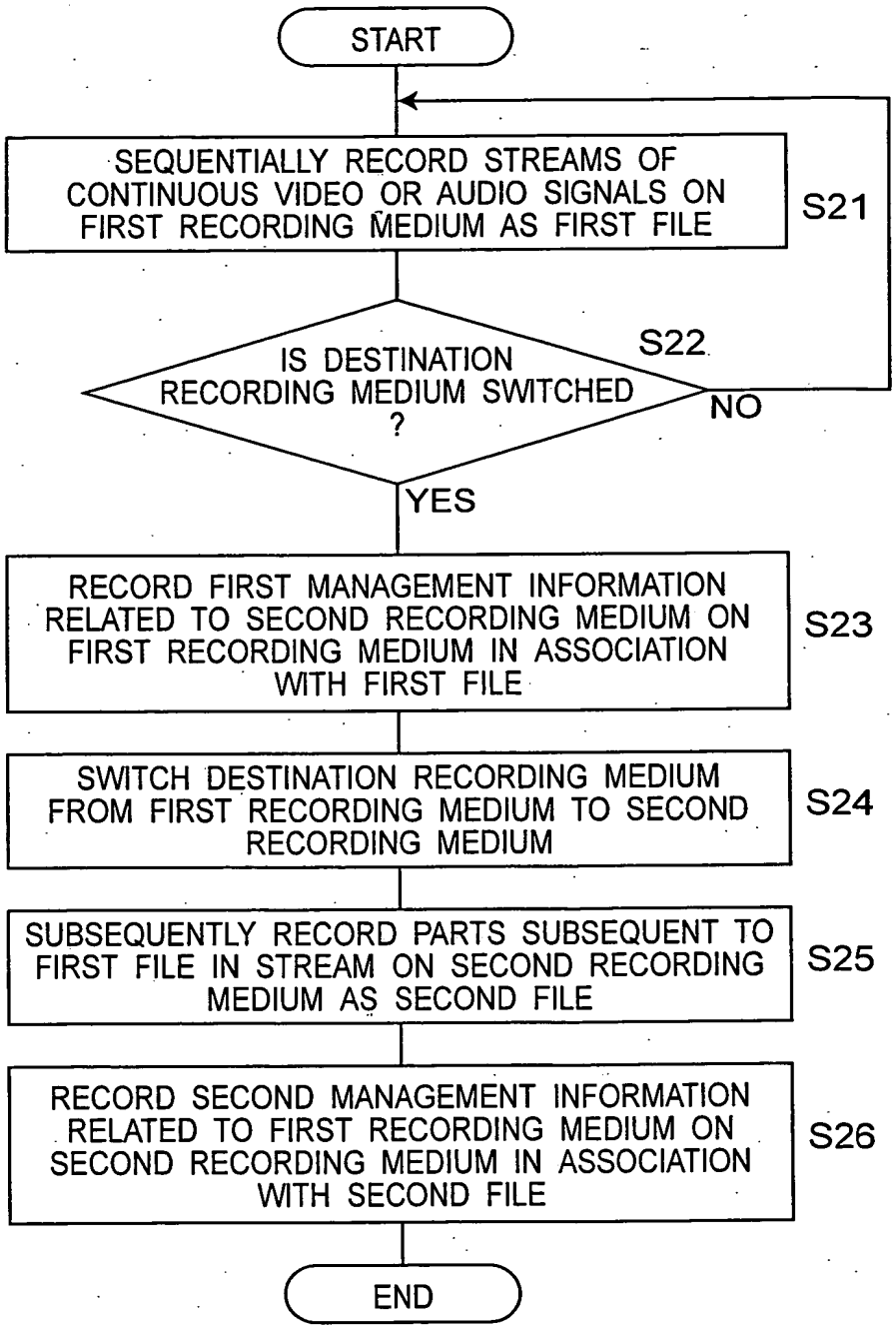

START
SEQUENTIALLY RECORD STREAMS OF CONTINUOUS VIDEO OR AUDIO SIGNALS ON FIRST RECORDING MEDIUM AS FIRST FILE
S21
IS DESTINATION RECORDING MEDIUM SWITCHED ?
S22
NO
YES
RECORD FIRST MANAGEMENT INFORMATION RELATED TO SECOND RECORDING MEDIUM ON FIRST RECORDING MEDIUM IN ASSOCIATION WITH FIRST FILE
S23
SWITCH DESTINATION RECORDING MEDIUM FROM FIRST RECORDING MEDIUM TO SECOND RECORDING MEDIUM
S24
SUBSEQUENTLY RECORD PARTS SUBSEQUENT TO FIRST FILE IN STREAM ON SECOND RECORDING MEDIUM AS SECOND FILE
S25
RECORD SECOND MANAGEMENT INFORMATION RELATED TO FIRST RECORDING MEDIUM ON SECOND RECORDING MEDIUM IN ASSOCIATION WITH SECOND FILE
S26
END

Fig.16

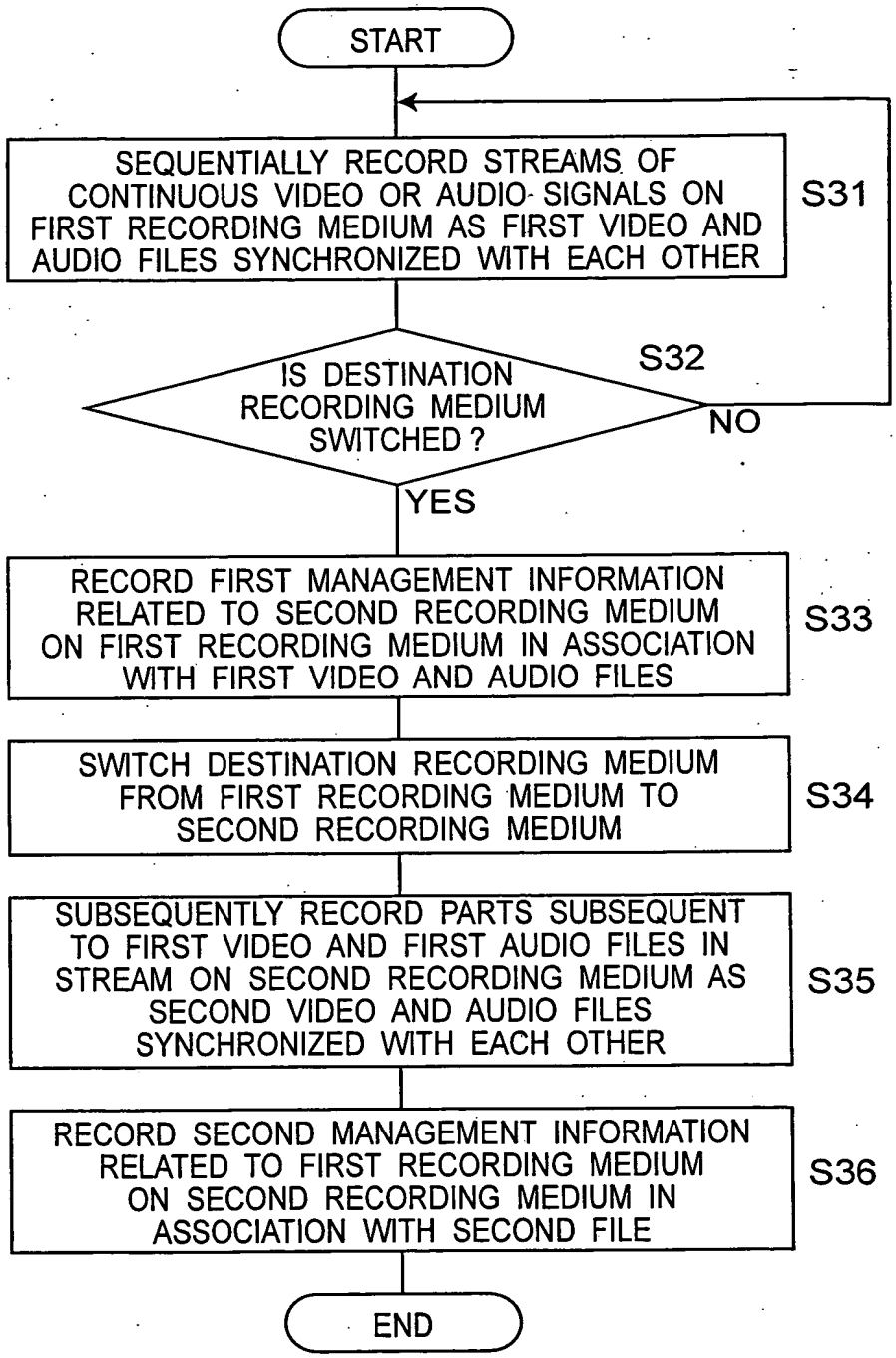

START
SEQUENTIALLY RECORD STREAMS OF CONTINUOUS VIDEO OR AUDIO SIGNALS ON FIRST RECORDING MEDIUM AS FIRST VIDEO AND AUDIO FILES SYNCHRONIZED WITH EACH OTHER
S31
IS DESTINATION RECORDING MEDIUM SWITCHED ?
S32
NO
YES
RECORD FIRST MANAGEMENT INFORMATION RELATED TO SECOND RECORDING MEDIUM ON FIRST RECORDING MEDIUM IN ASSOCIATION WITH FIRST VIDEO AND AUDIO FILES
S33
SWITCH DESTINATION RECORDING MEDIUM FROM FIRST RECORDING MEDIUM TO SECOND RECORDING MEDIUM
S34
SUBSEQUENTLY RECORD PARTS SUBSEQUENT TO FIRST VIDEO AND FIRST AUDIO FILES IN STREAM ON SECOND RECORDING MEDIUM AS SECOND VIDEO AND AUDIO FILES SYNCHRONIZED WITH EACH OTHER
S35
RECORD SECOND MANAGEMENT INFORMATION RELATED TO FIRST RECORDING MEDIUM ON SECOND RECORDING MEDIUM IN ASSOCIATION WITH SECOND FILE
S36
END

Fig.17

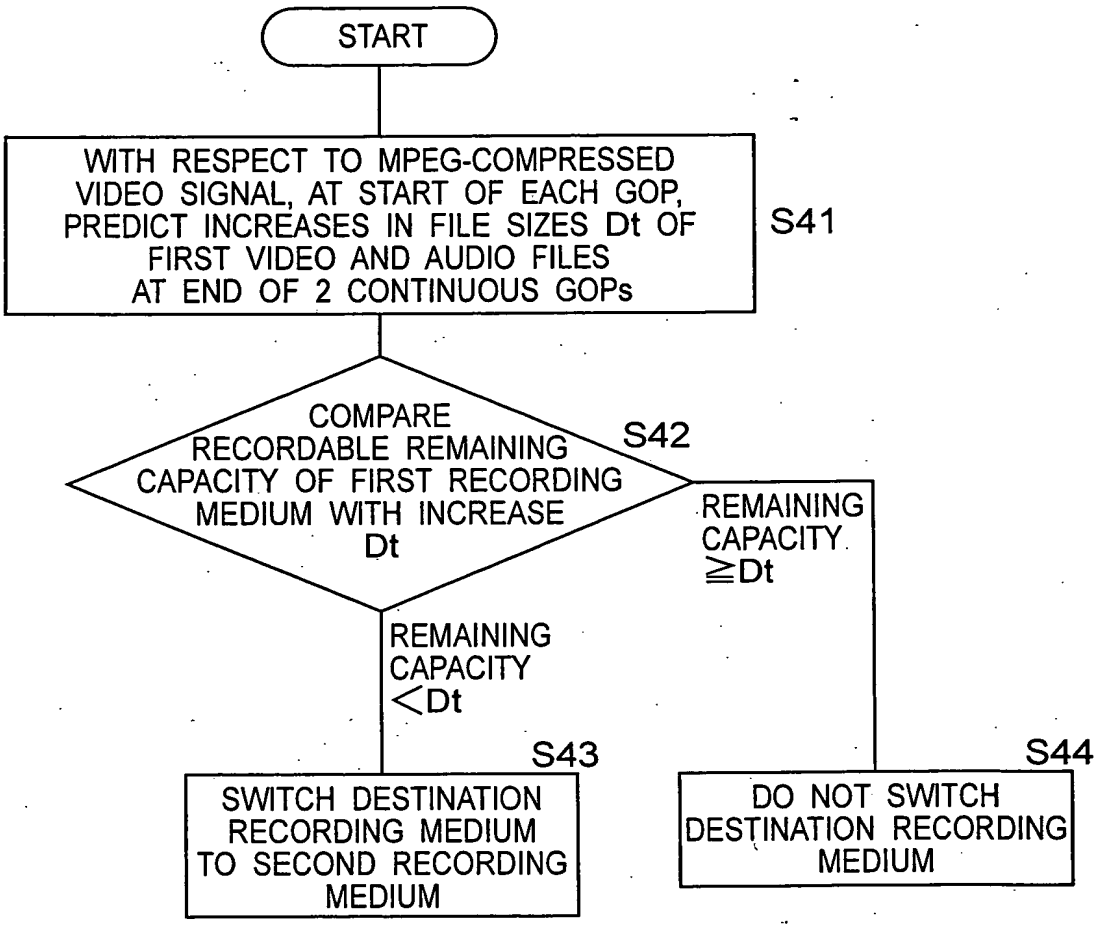

START
WITH RESPECT TO MPEG-COMPRESSED VIDEO SIGNAL, AT START OF EACH GOP, PREDICT INCREASES IN FILE SIZES Dt OF FIRST VIDEO AND AUDIO FILES AT END OF 2 CONTINUOUS GOPs
S41
COMPARE RECORDABLE REMAINING CAPACITY OF FIRST RECORDING MEDIUM WITH INCREASE Dt
S42
REMAINING CAPACITY ≧Dt
REMAINING CAPACITY <Dt
S43
SWITCH DESTINATION RECORDING MEDIUM TO SECOND RECORDING MEDIUM
S44
DO NOT SWITCH DESTINATION RECORDING MEDIUM

Fig.18

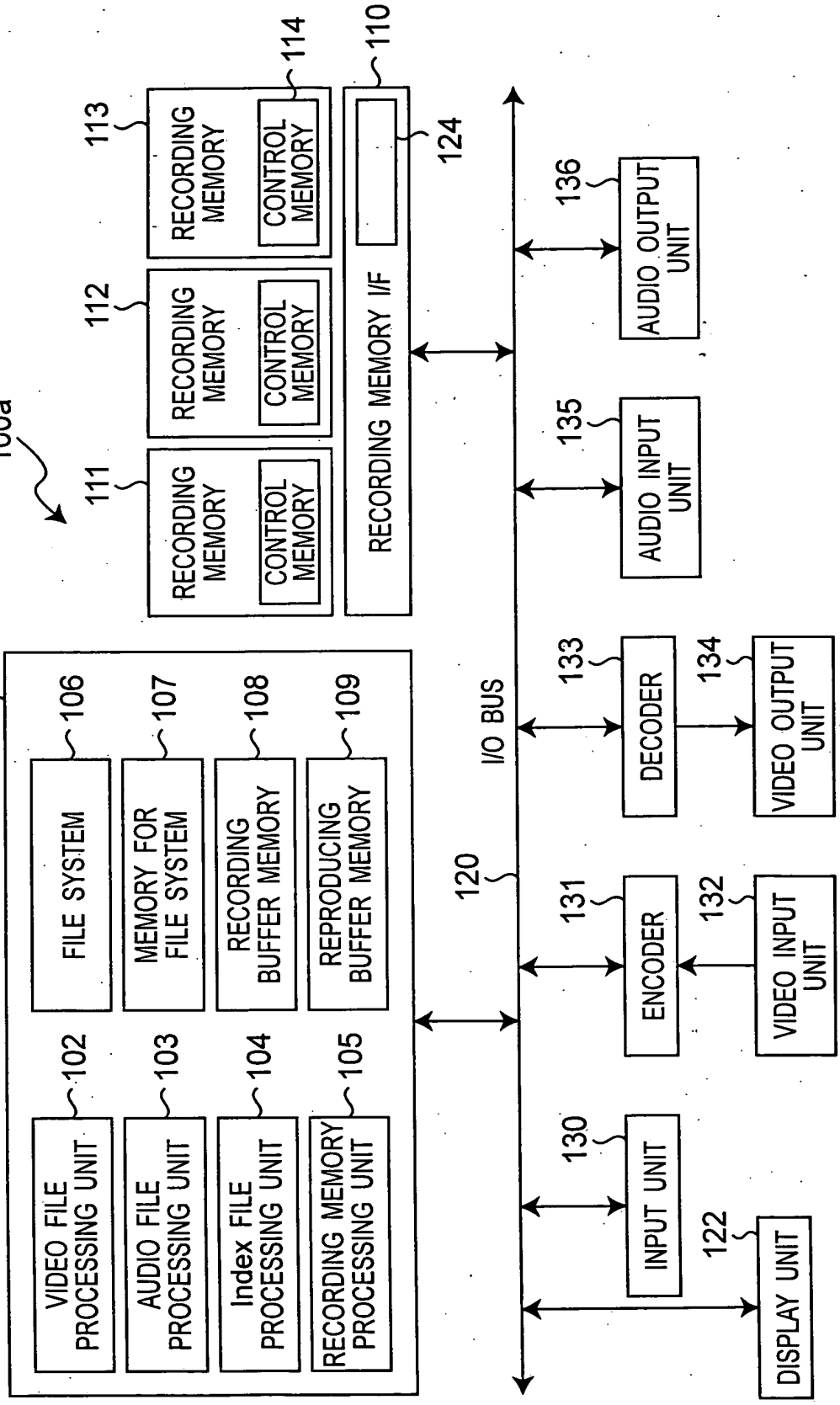

100a
101
VIDEO FILE PROCESSING UNIT
102
AUDIO FILE PROCESSING UNIT
103
Index FILE PROCESSING UNIT
104
RECORDING MEMORY PROCESSING UNIT
105
FILE SYSTEM
106
MEMORY FOR FILE SYSTEM
107
RECORDING BUFFER MEMORY
108
REPRODUCING BUFFER MEMORY
109
RECORDING MEMORY I/F
110
124
RECORDING MEMORY
111
CONTROL MEMORY
RECORDING MEMORY
112
CONTROL MEMORY
RECORDING MEMORY
113
CONTROL MEMORY
114
120
I/O BUS
130
INPUT UNIT
122
DISPLAY UNIT
131
ENCODER
132
VIDEO INPUT UNIT
133
DECODER
134
VIDEO OUTPUT UNIT
135
AUDIO INPUT UNIT
136
AUDIO OUTPUT UNIT

Fig.19

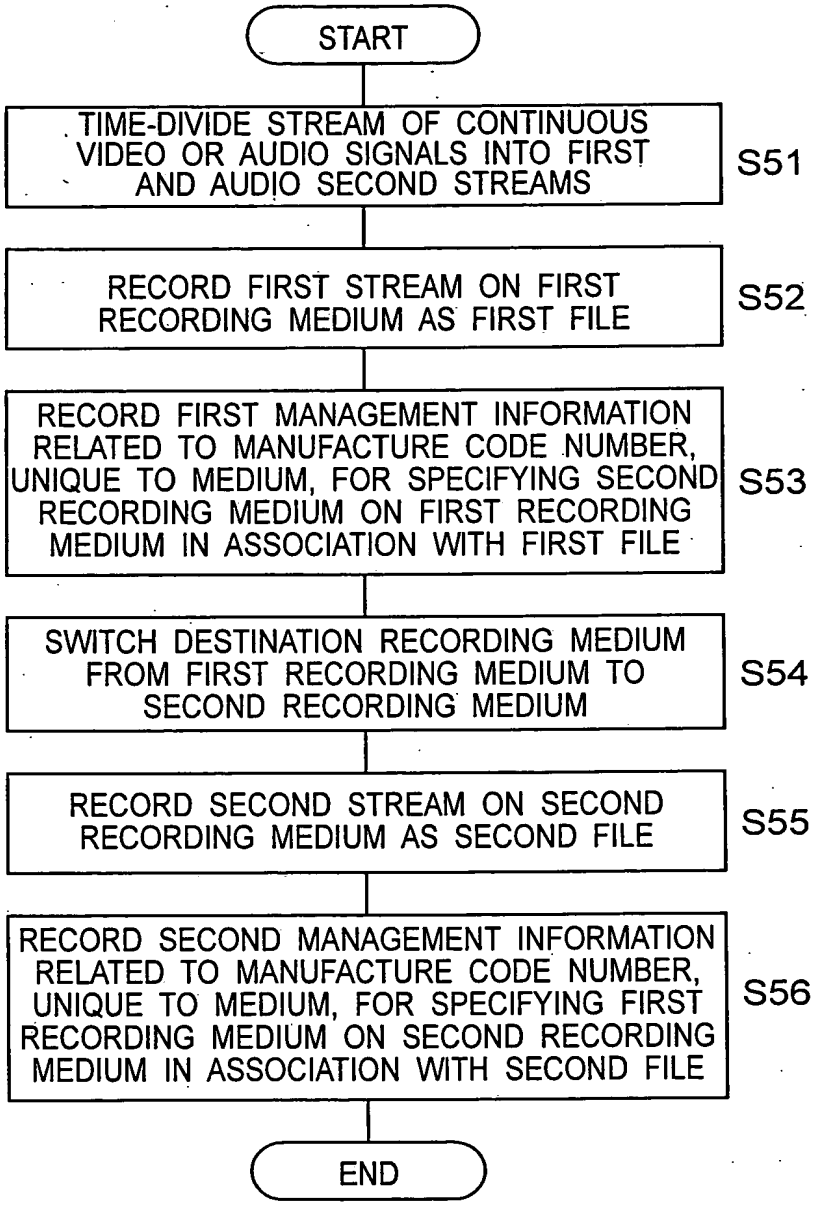

START
TIME-DIVIDE STREAM OF CONTINUOUS VIDEO OR AUDIO SIGNALS INTO FIRST AND AUDIO SECOND STREAMS
S51
RECORD FIRST STREAM ON FIRST RECORDING MEDIUM AS FIRST FILE
S52
RECORD FIRST MANAGEMENT INFORMATION RELATED TO MANUFACTURE CODE NUMBER, UNIQUE TO MEDIUM, FOR SPECIFYING SECOND RECORDING MEDIUM ON FIRST RECORDING MEDIUM IN ASSOCIATION WITH FIRST FILE
S53
SWITCH DESTINATION RECORDING MEDIUM FROM FIRST RECORDING MEDIUM TO SECOND RECORDING MEDIUM
S54
RECORD SECOND STREAM ON SECOND RECORDING MEDIUM AS SECOND FILE
S55
RECORD SECOND MANAGEMENT INFORMATION RELATED TO MANUFACTURE CODE NUMBER, UNIQUE TO MEDIUM, FOR SPECIFYING FIRST RECORDING MEDIUM ON SECOND RECORDING MEDIUM IN ASSOCIATION WITH SECOND FILE
S56
END

Fig.20

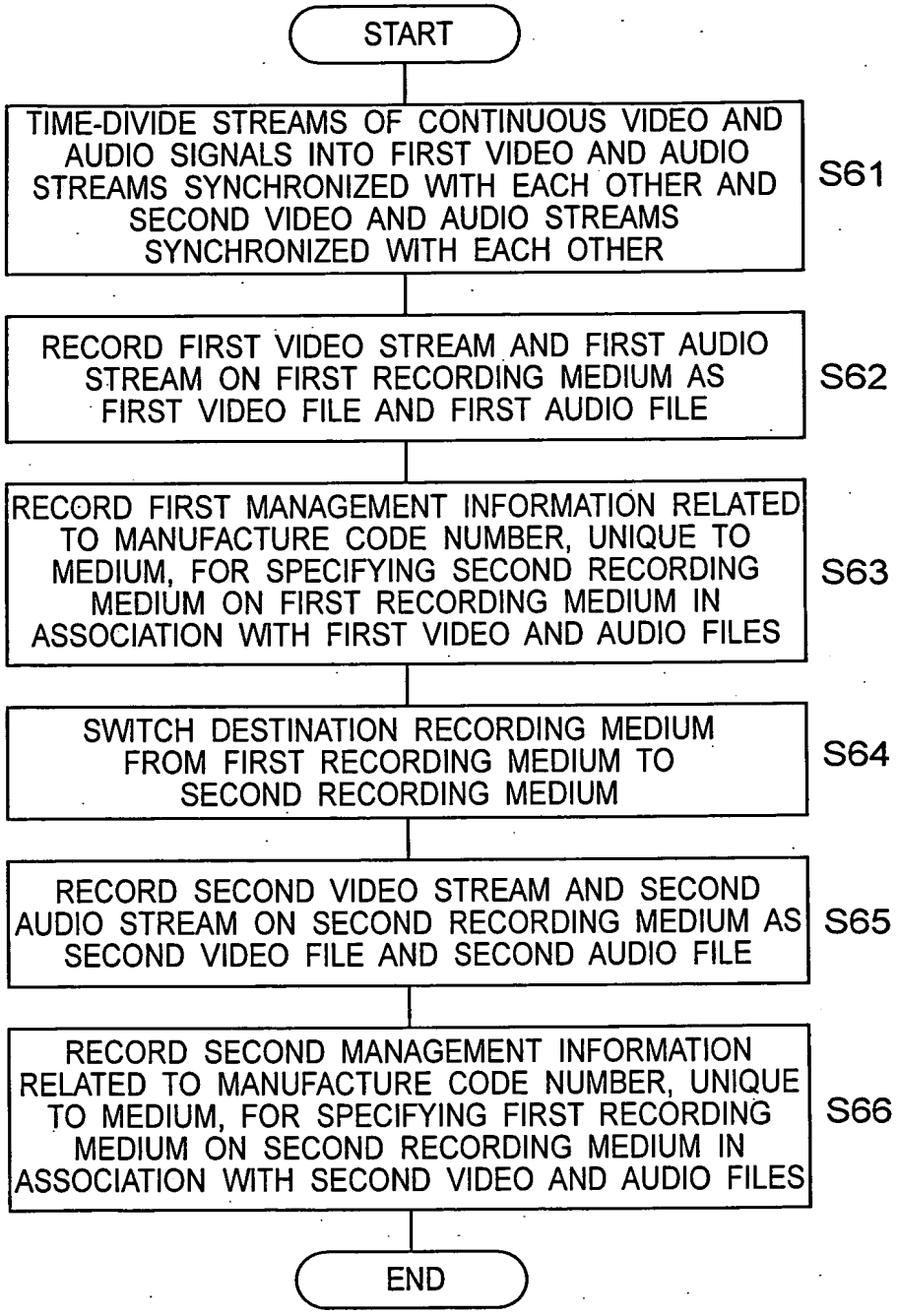

START
TIME-DIVIDE STREAMS OF CONTINUOUS VIDEO AND AUDIO SIGNALS INTO FIRST VIDEO AND AUDIO STREAMS SYNCHRONIZED WITH EACH OTHER AND SECOND VIDEO AND AUDIO STREAMS SYNCHRONIZED WITH EACH OTHER
S61
RECORD FIRST VIDEO STREAM AND FIRST AUDIO STREAM ON FIRST RECORDING MEDIUM AS FIRST VIDEO FILE AND FIRST AUDIO FILE
S62
RECORD FIRST MANAGEMENT INFORMATION RELATED TO MANUFACTURE CODE NUMBER, UNIQUE TO MEDIUM, FOR SPECIFYING SECOND RECORDING MEDIUM ON FIRST RECORDING MEDIUM IN ASSOCIATION WITH FIRST VIDEO AND AUDIO FILES
S63
SWITCH DESTINATION RECORDING MEDIUM FROM FIRST RECORDING MEDIUM TO SECOND RECORDING MEDIUM
S64
RECORD SECOND VIDEO STREAM AND SECOND AUDIO STREAM ON SECOND RECORDING MEDIUM AS SECOND VIDEO FILE AND SECOND AUDIO FILE
S65
RECORD SECOND MANAGEMENT INFORMATION RELATED TO MANUFACTURE CODE NUMBER, UNIQUE TO MEDIUM, FOR SPECIFYING FIRST RECORDING MEDIUM ON SECOND RECORDING MEDIUM IN ASSOCIATION WITH SECOND VIDEO AND AUDIO FILES
S66
END

Fig.21

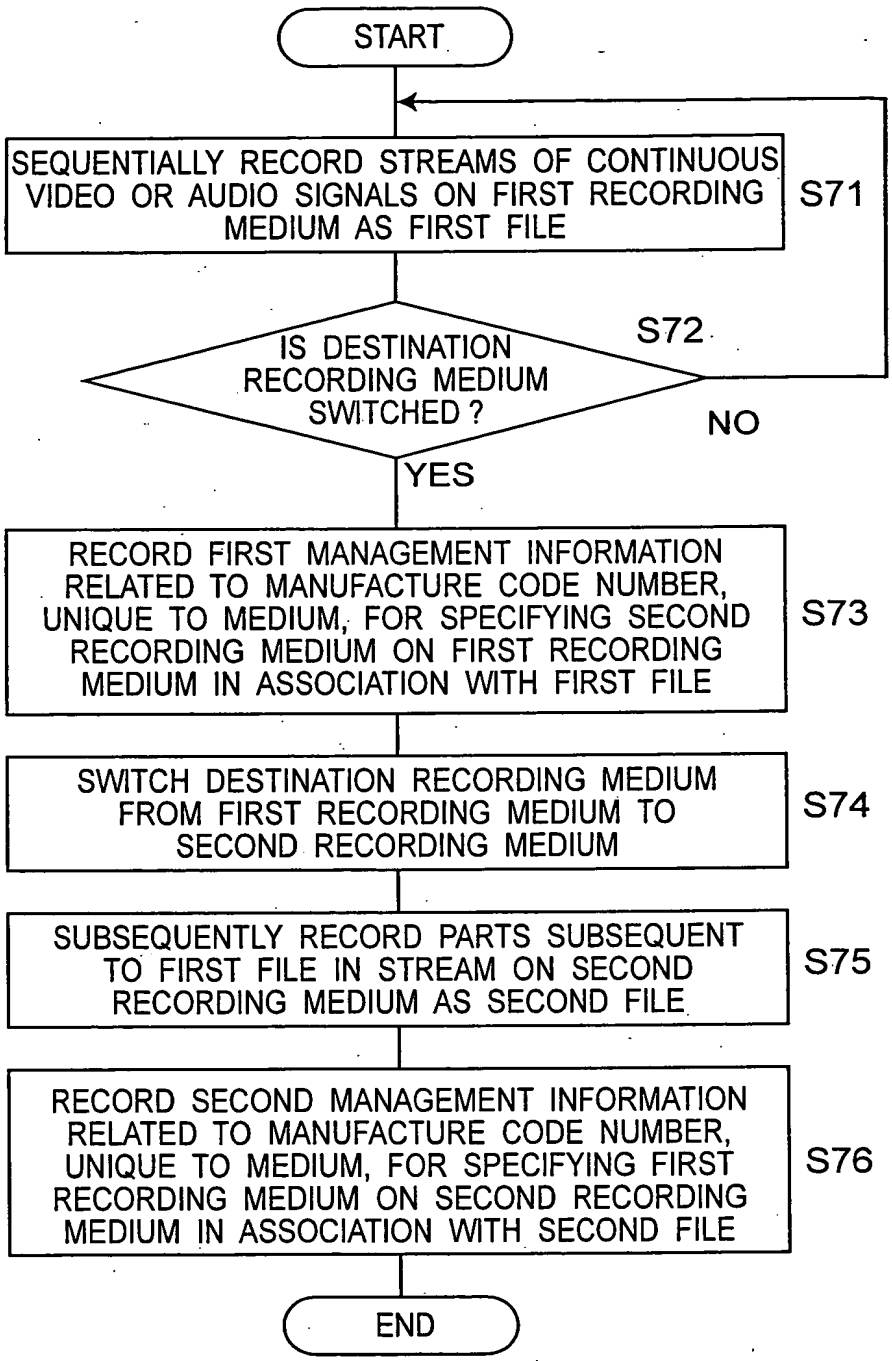

START
SEQUENTIALLY RECORD STREAMS OF CONTINUOUS VIDEO OR AUDIO SIGNALS ON FIRST RECORDING MEDIUM AS FIRST FILE
S71
IS DESTINATION RECORDING MEDIUM SWITCHED ?
S72
NO
YES
RECORD FIRST MANAGEMENT INFORMATION RELATED TO MANUFACTURE CODE NUMBER, UNIQUE TO MEDIUM, FOR SPECIFYING SECOND RECORDING MEDIUM ON FIRST RECORDING MEDIUM IN ASSOCIATION WITH FIRST FILE
S73
SWITCH DESTINATION RECORDING MEDIUM FROM FIRST RECORDING MEDIUM TO SECOND RECORDING MEDIUM
S74
SUBSEQUENTLY RECORD PARTS SUBSEQUENT TO FIRST FILE IN STREAM ON SECOND RECORDING MEDIUM AS SECOND FILE
S75
RECORD SECOND MANAGEMENT INFORMATION RELATED TO MANUFACTURE CODE NUMBER, UNIQUE TO MEDIUM, FOR SPECIFYING FIRST RECORDING MEDIUM ON SECOND RECORDING MEDIUM IN ASSOCIATION WITH SECOND FILE
S76
END

Fig.22

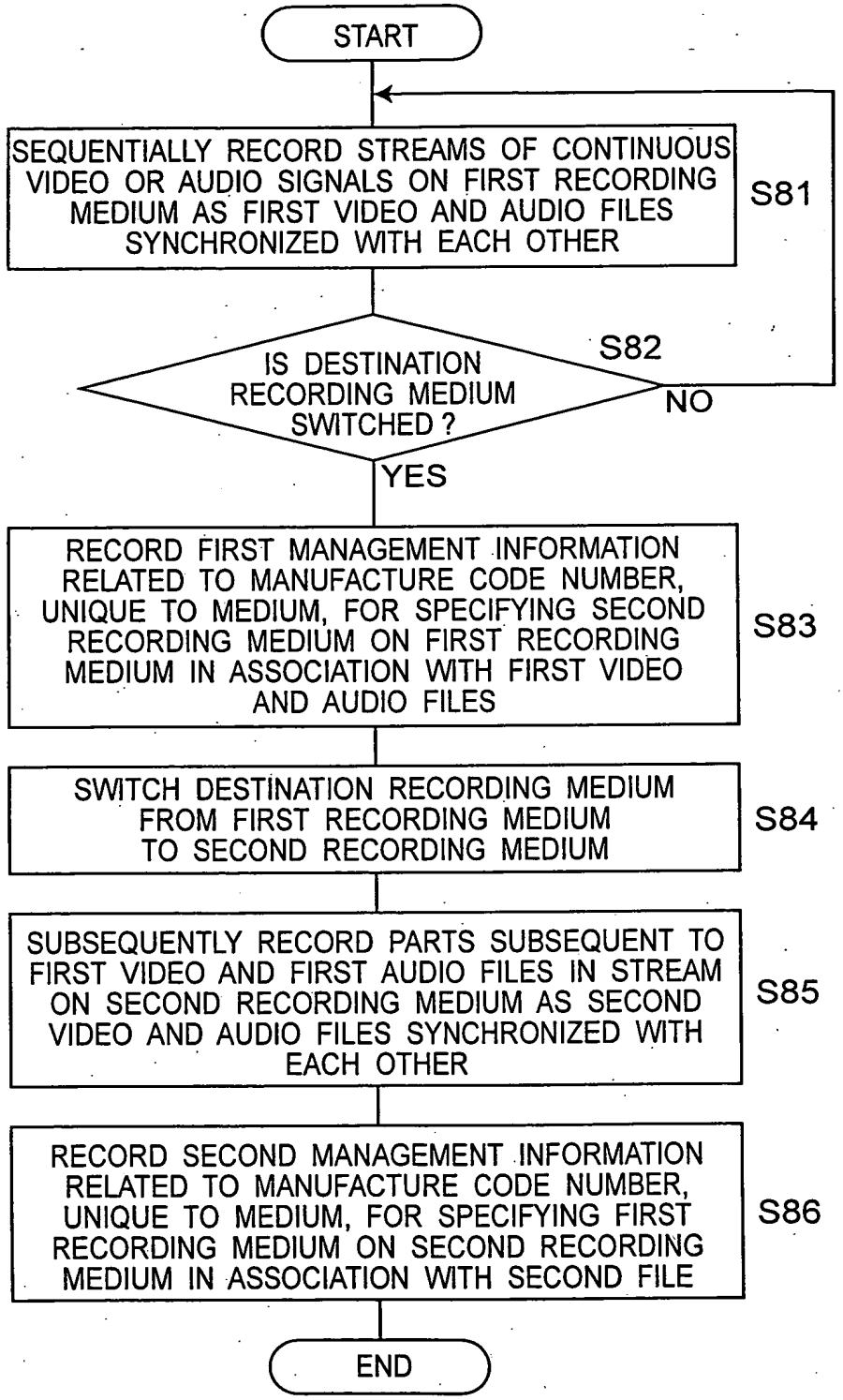

START
SEQUENTIALLY RECORD STREAMS OF CONTINUOUS VIDEO OR AUDIO SIGNALS ON FIRST RECORDING MEDIUM AS FIRST VIDEO AND AUDIO FILES SYNCHRONIZED WITH EACH OTHER
S81
IS DESTINATION RECORDING MEDIUM SWITCHED ?
S82
NO
YES
RECORD FIRST MANAGEMENT INFORMATION RELATED TO MANUFACTURE CODE NUMBER, UNIQUE TO MEDIUM, FOR SPECIFYING SECOND RECORDING MEDIUM ON FIRST RECORDING MEDIUM IN ASSOCIATION WITH FIRST VIDEO AND AUDIO FILES
S83
SWITCH DESTINATION RECORDING MEDIUM FROM FIRST RECORDING MEDIUM TO SECOND RECORDING MEDIUM
S84
SUBSEQUENTLY RECORD PARTS SUBSEQUENT TO FIRST VIDEO AND FIRST AUDIO FILES IN STREAM ON SECOND RECORDING MEDIUM AS SECOND VIDEO AND AUDIO FILES SYNCHRONIZED WITH EACH OTHER
S85
RECORD SECOND MANAGEMENT INFORMATION RELATED TO MANUFACTURE CODE NUMBER, UNIQUE TO MEDIUM, FOR SPECIFYING FIRST RECORDING MEDIUM ON SECOND RECORDING MEDIUM IN ASSOCIATION WITH SECOND FILE
S86
END

Fig.23

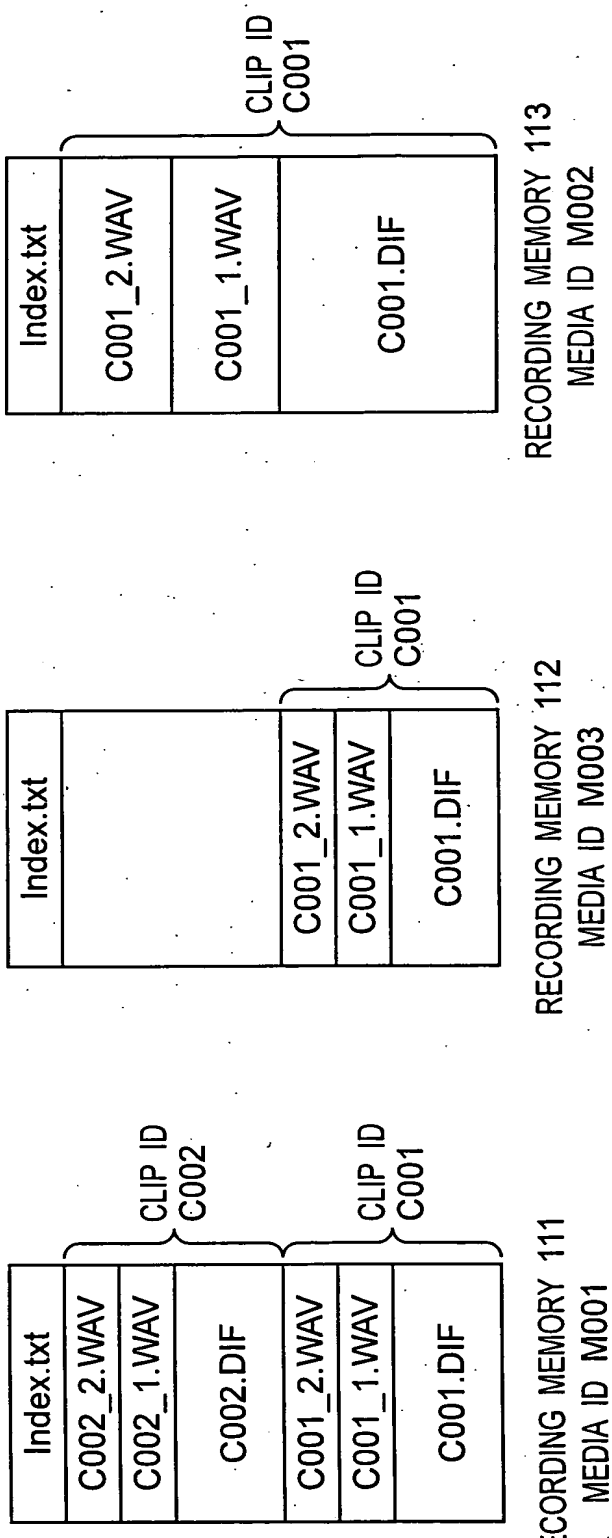

Index.txt
C002_2.WAV
C002_1.WAV
C002.DIF
C001_2.WAV
C001_1.WAV
C001.DIF
CLIP ID C002
CLIP ID C001
RECORDING MEMORY 111
MEDIA ID M001
Index.txt
C001_2.WAV
C001_1.WAV
C001.DIF
CLIP ID C001
RECORDING MEMORY 112
MEDIA ID M003
Index.txt
C001_2.WAV
C001_1.WAV
C001.DIF
CLIP ID C001
RECORDING MEMORY 113
MEDIA ID M002

Fig.24

RECORDING MEMORY 111 (Media ID M001)

```
Media Index
  M001, MEDIUM 1,
Clip Index
  C001, CLIP 1, (UMID0), 29, 97, T0, 0, 0,   ,   ,
  C002, CLIP 2, (UMID1), 29, 97, T1, 0, 0,   , M002 C001
```

RECORDING MEMORY 112 (Media ID M003)

```
Media Index
  M003, MEDIUM 3,
Clip Index
  C001, CLIP 1, (UMID1), 29, 97, T3, 1, T1+T2, M002 C001,   ,
```

RECORDING MEMORY 113 (Media ID M002)

```
Media Index
  M002, MEDIUM 2,
Clip Index
  C001, CLIP 1, (UMID1), 29, 97, T2, 4, T1, M001 C002, M003 C001,
```


10/557708

Fig.25A

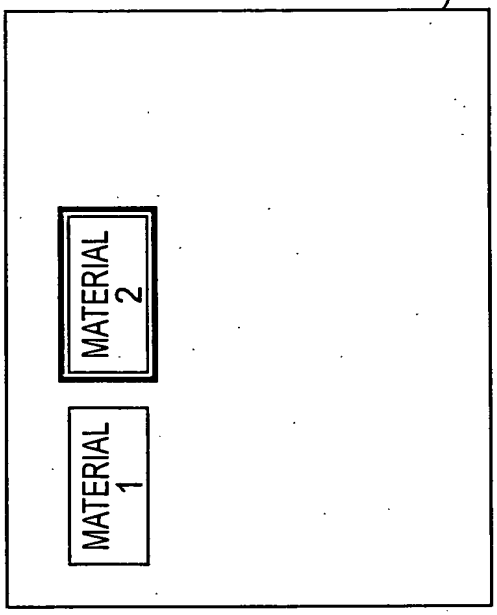


Fig.25B

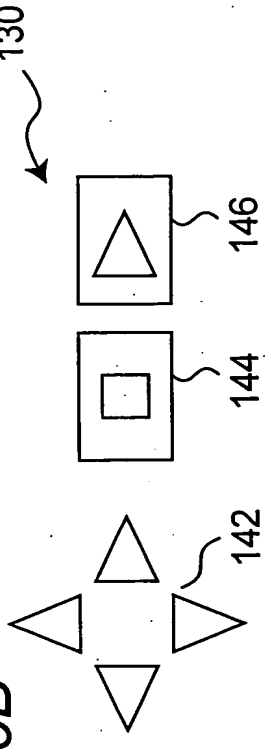


Fig.26

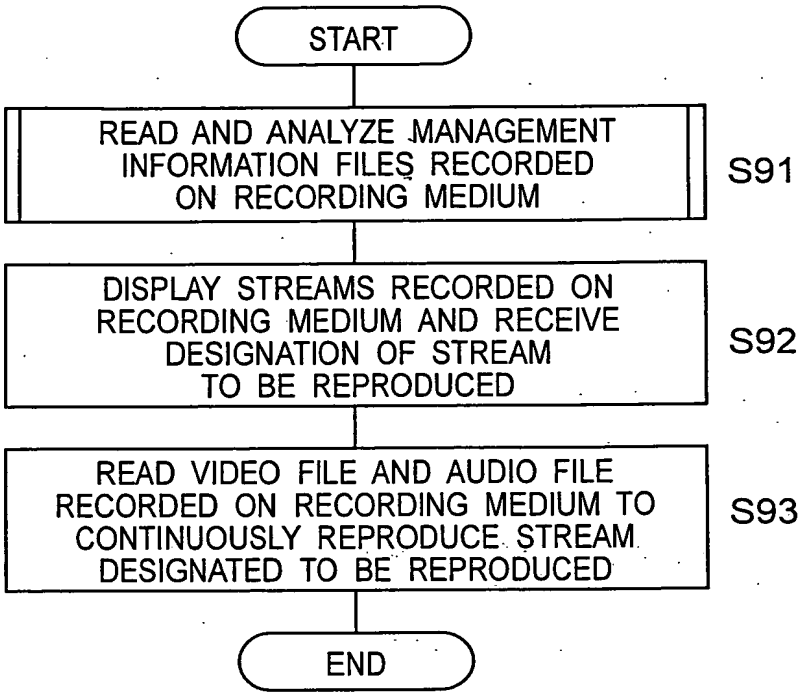

START
READ AND ANALYZE MANAGEMENT INFORMATION FILES RECORDED ON RECORDING MEDIUM
S91
DISPLAY STREAMS RECORDED ON RECORDING MEDIUM AND RECEIVE DESIGNATION OF STREAM TO BE REPRODUCED
S92
READ VIDEO FILE AND AUDIO FILE RECORDED ON RECORDING MEDIUM TO CONTINUOUSLY REPRODUCE STREAM DESIGNATED TO BE REPRODUCED
S93
END

Fig.27

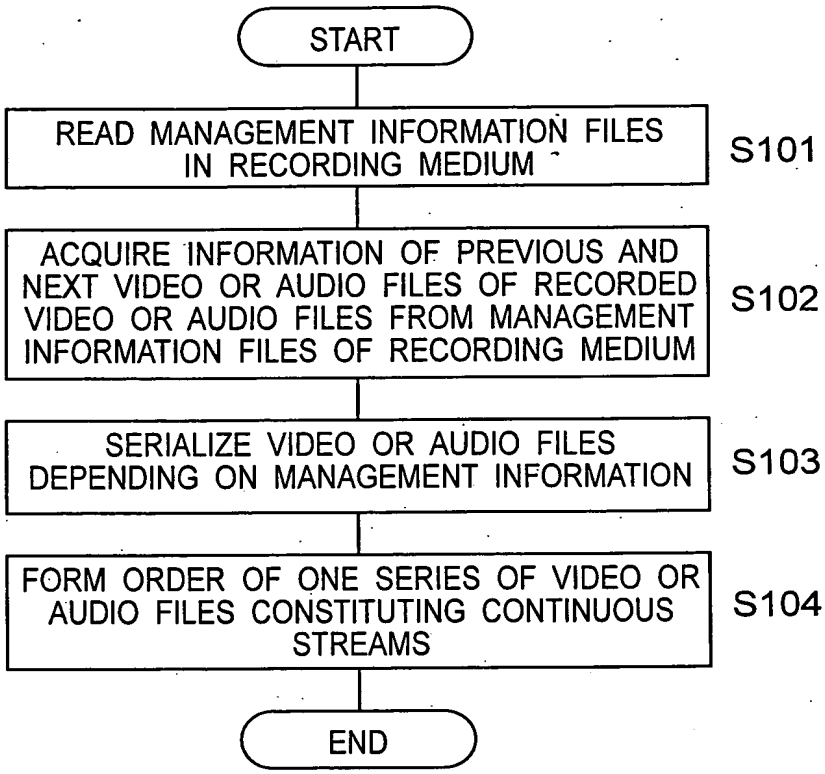

START
READ MANAGEMENT INFORMATION FILES IN RECORDING MEDIUM
S101
ACQUIRE INFORMATION OF PREVIOUS AND NEXT VIDEO OR AUDIO FILES OF RECORDED VIDEO OR AUDIO FILES FROM MANAGEMENT INFORMATION FILES OF RECORDING MEDIUM
S102
SERIALIZE VIDEO OR AUDIO FILES DEPENDING ON MANAGEMENT INFORMATION
S103
FORM ORDER OF ONE SERIES OF VIDEO OR AUDIO FILES CONSTITUTING CONTINUOUS STREAMS
S104
END

Fig.28

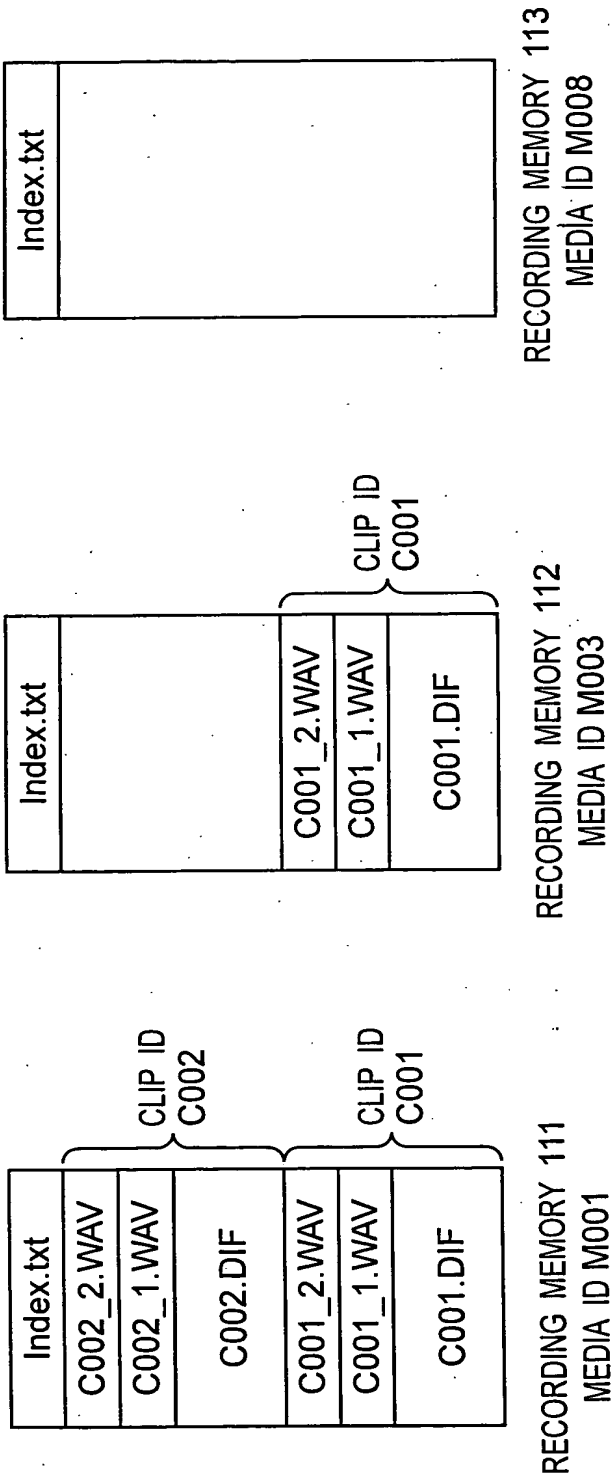

Index.txt
C002_2.WAV
C002_1.WAV
C002.DIF
C001_2.WAV
C001_1.WAV
C001.DIF
CLIP ID C002
CLIP ID C001
RECORDING MEMORY 111
MEDIA ID M001
Index.txt
C001_2.WAV
C001_1.WAV
C001.DIF
CLIP ID C001
RECORDING MEMORY 112
MEDIA ID M003
Index.txt
RECORDING MEMORY 113
MEDIA ID M008

Fig.29

RECORDING MEMORY 111 (Media ID M001)

```
Media Index
  M001, MEDIUM 1,
Clip Index
  C001, CLIP 1, (UMID0), 29, 97, T0, 0, 0,   ,   ,
  C002, CLIP 2, (UMID1), 29, 97, T1, 0, 0,   , M002 C001
```

RECORDING MEMORY 112 (Media ID M003)

```
Media Index
  M003, MEDIUM 3,
Clip Index
  C001, CLIP 1, (UMID1), 29, 97, T3, 1, T1+T2, M002 C001,   ,
```

RECORDING MEMORY 113 (Media ID M008)

```
Media Index
  M008, MEDIUM 8,
Clip Index
```


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Fig.30A

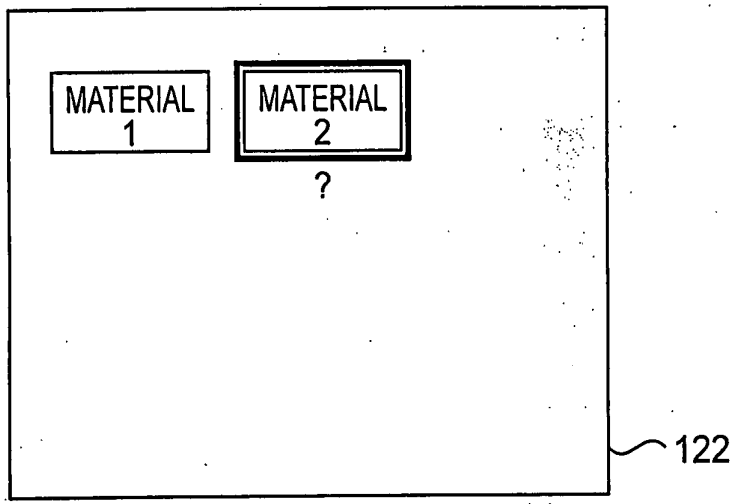


Fig.30B

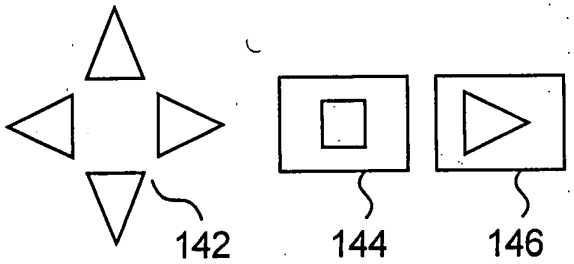


Fig.30C

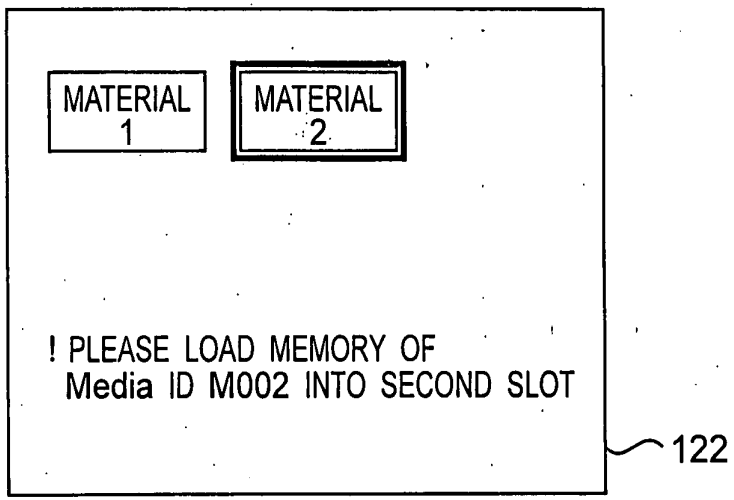
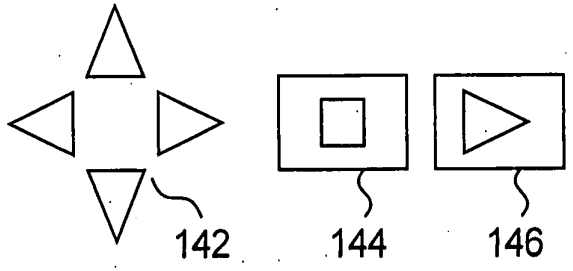


Fig.30D



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